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a second modification of a coding sequence that normally encodes a proline that is located, relative to the gene from which it is derived, at position 106 of the amino acid sequence of the mature EPSPS sequence of SEQ ID NO: 3, to encode serine in a mature plant EPSPS sequence.

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~~546~~ (Twice Amended). The vector of claim ~~45~~ further comprising a nucleic acid encoding a chloroplast transit peptide operably associated with, and in the order of transcription between, the promoter functional in a plant cell and the ~~nucleic acid of claim 42~~. *Modified Plant DNA Molecule*

47 (Twice Amended). A plant cell comprising a vector comprising the following components, which are operably associated in the direction of transcription:

- G2*
- (a) a promoter functional in a plant cell;
 - (b) nucleic acid encoding a chloroplast transit peptide;
 - (c) a modified nucleic acid molecule of maize origin encoding an EPSPS enzyme, the modifications comprising:

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a first modification of a coding sequence that normally encodes a threonine that is located, relative to the gene from which it is derived, at position 102 of the amino acid sequence of the mature EPSPS sequence of SEQ ID NO: 3, to encode isoleucine in a mature plant EPSPS sequence; and

a second modification of a coding sequence that normally encodes a proline that is located, relative to the gene from which it is derived, at position 106 of the amino acid sequence of the mature EPSPS sequence of SEQ ID NO: 3, to encode serine in a mature plant EPSPS

sequence; and

(d) an untranslated transcription termination signal region.

50 (Twice Amended). A transgenic plant comprising a vector comprising the following components, which are operably associated in the direction of transcription:

(a) a promoter functional in a plant cell;

(b) nucleic acid encoding a chloroplast transit peptide;

(c) a modified nucleic acid molecule of plant origin encoding an EPSPS enzyme, the modifications comprising:

a first modification of a coding sequence that normally encodes a threonine that is located, relative to the gene from which it is derived, at position 102 of the amino acid sequence of the mature EPSPS sequence of SEQ ID NO: 3, to encode isoleucine in a mature plant EPSPS sequence; and

a second modification of a coding sequence that normally encodes a proline that is located, relative to the gene from which it is derived, at position 106 of the amino acid sequence of the mature EPSPS sequence of SEQ ID NO: 3, to encode serine in a mature plant EPSPS sequence; and

(d) an untranslated transcription termination signal region.

53 (Twice Amended). A method for selectively controlling plants which method comprises the steps of:

a) planting crop seeds or plants which have increased glyphosate tolerance as a result of a

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chimeric gene being inserted into said crop seed or plant, said chimeric gene having

(i) a promoter region functional in a plant cell; and

(ii) a nucleic acid molecule of plant origin encoding a modified EPSPS enzyme,

the modifications comprising:

a first modification of a coding sequence that normally encodes a threonine that is located, relative to the gene from which it is derived, at position 102 of the amino acid sequence of the mature EPSPS sequence of SEQ ID NO: 3, to encode isoleucine in a mature plant EPSPS sequence; and

a second modification of a coding sequence that normally encodes a proline that is located, relative to the gene from which it is derived, at position 106 of the amino acid sequence of the mature EPSPS sequence of SEQ ID NO: 3, to encode serine in a mature plant EPSPS sequence; and

(iii) an untranslated transcription termination signal region; and

b) applying to said plants a sufficient amount of glyphosate to control said untransformed plants without significantly affecting said plants that comprise the chimeric gene.

54. (Amended) A plant transformed with a nucleic acid encoding a mature EPSPS protein of plant origin having isoleucine substituted for the threonine that is relatively located at position 102 of the amino acid sequence of mature EPSPS sequence of SEQ ID NO: 3; and serine substituted for the proline that is relatively located at position 106 of the amino acid sequence of mature EPSPS sequence of SEQ ID NO: 3.